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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/662,847

09/15/2003

Alexander J. Roberts

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10/17/2006

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EXAMINER

WALTERS, JOHN DANIEL

ART UNIT

PAPER NUMBER

3618

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,847

Applicant(s)

ROBERTS, ALEXANDER J.

Examiner

John D. Walters

Art Unit

3618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5,6,8-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,6,8-10 and 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1, 3, 5, 6, 8 – 10 and 12 – 16 have been examined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamai et al. (6,307,277) in view of Bhavsar et al. (6,691,807).

Tamai et al. discloses a regenerative braking system for a vehicle (see Fig 1, and column 2, lines 21-29) comprising:

re: claim 1: a displacement on demand (DOD) engine (Fig 1, item 12) including cylinders (column 2, lines 40-41);

a battery (24);

an electric machine (18) that has motor and generator modes (column 6, lines 55-59) and that is selectively driven by a wheel of the vehicle (column 9, lines 9-17);
and,

a controller (25) that detects a braking condition of the vehicle, that deactivates at least one of the cylinders in response to the braking condition (column 9, line 9 to column 10, line 5), and that operates the electric machine in the generator mode during the braking condition to charge the battery.

The system of Tamai et al. proceeds to deactivate all cylinders of the engine when in the regenerative braking state rather than maintain at least another of the cylinders active.

However, Bhavsar et al. teaches a propulsion system for a hybrid vehicle comprising a DOD engine (Fig 1, item 16; and column 3, lines 35-36), battery (15), electric machine (14) that has motor and generator modes (column 3, line 62 to column 4, line 3) and that is selectively driven by a wheel of the vehicle (column 3, lines 36-38), the system further comprising a controller (18) that is able to detect a condition of the vehicle and selectively deactivate at least one of the engine cylinders while maintaining at least another of the cylinders active (column 4, lines 21-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to have modified the system of Tamai to control the cylinders such that in response to a braking condition of the vehicle, while deactivating one or more of the engine cylinders, at least another of the cylinders would be maintained active in response to the braking condition in accordance with the teachings of Bhavsar et al. in order to save fuel while preserving some engine cylinder activation to respond-to driver-demanded speed or torque as suggested by the Bhavsar et al. reference at column 7 lines 53 to 65.

Regarding the features of claim 3: wherein the controller detects termination of the braking condition and activates all of the cylinders in response to such termination, the system of Bhavsar et al. further teaches a controller that detects a change in the

system state and can respond by activating all of the cylinders in response as appropriate (column 5, line 35 to column 6, line 14).

Regarding claim 1: wherein the controller monitors a vehicle speed and activates the at least one of the cylinders when the vehicle speed when the vehicle speed achieves a threshold (Bhavsar column 5, lines 4-8, lines 13-23, and lines 30-45).

Regarding claim 5: wherein the controller selectively operates the electric machine in the motor mode to drive the wheel of the vehicle (Bhavsar column 5, lines 24-47 and see Fig 3, the operational flow path 52-54-58-64, and where the battery supplies the current to the electrical machine (column 4, lines 1-2)).

Regarding claim 6: wherein the controller selectively deactivates all of the cylinders of the engine and operates the electric machine in the motor mode to drive the vehicle wheel (see Bhavsar Fig 3, the "EM Mode" Block 64, and refer to the associated text of the reference).

Claims 8-10 and 12-16 are rejected under 35 U.S.C. § 103(a) as being obvious over Tamai et al. (6,307,277) in view of Bhavsar et al. (6,691,807).

The Examiner posits that the combination of Tamai et al. (-277) and Bhavsar et al. as applied above to claims 1, 3, 5 and 6 teaches the claimed method of the claims 8-10 and 12-16 because the method is obviously disclosed. The rationale for this obviousness is that the system of the combination of Tamai et al. (-277) and Bhavsar et al. as applied above to claims 1, 3, 5 and 6, in its normal and usual application would necessarily require the claimed steps: of **claim 8** (detecting a braking condition of the

vehicle, deactivating at least one cylinder of the engine in response to the braking condition while maintaining at least another cylinder of the engine active; and driving the electric machine in a generator mode with a wheel of the vehicle to charge the battery); of **claim 9** (activating the electric machine in a drive mode to drive the vehicle wheel); of **claim 10** (providing electrical current to the electrical machine from the battery); and of **claim 12** (detecting termination of the braking condition and activating at least one of the cylinders) in response to that termination); and the claimed steps: of **claim 13** (detecting a braking condition of the vehicle; deactivating a cylinder of the engine in response to the braking condition while maintaining at least another cylinder of the engine active; retarding motion of the vehicle by driving an electric machine in a generator mode with a wheel of the vehicle to generate electrical current; detecting termination of the braking condition; and activating the cylinder and relieving the retarding in response to the termination); and of **claim 14** (charging a battery with electrical current; and of **claim 15** (activating the electric machine in a drive mode to drive the wheel of the vehicle; and of claim 16 (providing electrical current to the electrical machine from a battery). See MPEP Sec. 21 12.02, and refer *In re King*, 801 f2d 1324, 1326; 231 USPQ 136, 138 (Fed Cir 1986).

Therefore, because the prior art discloses all the structure necessary to perform the claimed functions, one of ordinary skill in the art would find the claimed method to be an obvious step in light of the disclosed structures of the combination of Tamai et al. (-277) and Bhavsar et al. as applied above to claims 1, 3, 5 and 6.

Response to Arguments

Applicant's arguments filed 11 August 2006 have been fully considered but they are not persuasive.

Applicant states, "Claim 1...Bhavsar is completely silent as to braking of the vehicle...no mention of deactivating at least one cylinder in response to a braking condition...furthermore noted that the Examiner's statement..."at least another of the cylinders would be maintained active in response to the braking condition in accordance with the teachings of Bhavsar et al." (emphasis added) is not only inaccurate, it is misleading."

First, as noted in the previous rejection, Tamai provides a teaching regarding to a controller reacting to a braking condition. Bhavsar is introduced to teach specifics relating to cylinder activation/deactivation of selected cylinders in a displacement on demand engine. Therefore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Second, in regards to the above quotation from the previous office action, Applicant is misreading and/or misunderstanding the statement. An alternative statement could be, "...at least another of the cylinders would be maintained active in

accordance with the teachings of Bhavsar, in response to the braking condition of Tamai.”

Applicant also states, “In making this obviousness rejection, the Examiner improperly uses hindsight.”

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant also states, “...claims 8 and 13...incorporates the above discussion with respect to claim 1.”

See the above discussion in regards to claim 1.

Applicant also states, “...claims 9, 10, 12 and 14 – 16 depend from one of claims 8 and 13 which define over prior art, as discussed in detail above.”

See the above discussion in regards to claims 8 and 13.

For these reasons, the rejections stand.

Conclusion

The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The prior art of Tabata et al; of Matsubara et al.; of Hanada et al; of Wakashiro et al. (-320; and -460); and of Glugla et al. each show features in common with some of the other structures of the inventive concept disclosed in the instant application.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

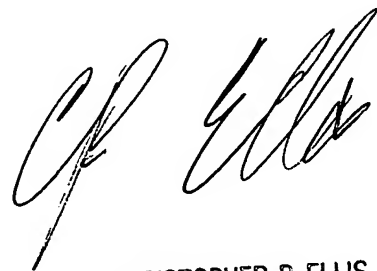
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John D. Walters whose telephone number is (571) 272-8269. The examiner can normally be reached on Monday - Friday, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Ellis can be reached on (571) 272-6914. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

John D. Walters
Examiner
Art Unit 3618

JDW



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